

PTO 08-6613

CC = JP
19970513
Kokai
09125538

BUILDING MATERIAL
[Kenzai]

Kiyomitsu Nishikawa

UNITED STATES PATENT AND TRADEMARK OFFICE
WASHINGTON, D.C. JULY 2008
TRANSLATED BY: THE MCELROY TRANSLATION COMPANY

PUBLICATION COUNTRY	(19):	JP
DOCUMENT NUMBER	(11):	09125538
DOCUMENT KIND	(12):	Kokai
PUBLICATION DATE	(43):	19970513
APPLICATION NUMBER	(21):	7285153
APPLICATION DATE	(22):	19951101
INTERNATIONAL CLASSIFICATION ⁶	(51):	E 04 B 1/64
INVENTOR	(72):	Kiyomitsu Nishikawa
APPLICANT	(71):	594109716 Sendo Nishikawa
TITLE	(54):	BUILDING MATERIAL
FOREIGN TITLE	[54A]:	Kenzai

Claims

1. A type of building material characterized by the fact that it comprises a core material having zeolite grain group mixed in gypsum, and an air permeable skin material anchored on the surface of the core material.
2. The building material described in Claim 1 characterized by the fact that it is in panel shape.

Detailed explanation of the invention

[0001]

Technical field of the invention

The present invention pertains to a type of building material. Especially, the present invention pertains to a type of building material that can absorb odor and can clean air.

[0002]

Prior art

In the prior art, gypsum board has been used as building material. The gypsum board has a planar shape comprising a gypsum core material and thick paper sheet for board applied on both sides of the core material. This gypsum board has flame resistance and soundproof property. Consequently, the gypsum board has been used as internal material for walls and ceiling.

[0003]

Problems to be solved by the invention

However, in the prior art, although the gypsum board is an excellent internal material for walls and ceiling, it cannot absorb indoor odor and cannot clean air entirely. On the other hand, there recently has

been a high demand on prevention of air pollution. Consequently, it becomes important to absorb indoor odor and to clean the air. As a result, the purpose of the present invention is to solve the aforementioned problems of the prior art by providing a type of building material that can absorb odor and clean air.

[0004]

Means to solve the problems

In order to solve the aforementioned problems, as the first invention, the present invention provides a type of building material characterized by the fact that it comprises a core material having zeolite grain group mixed in gypsum, and an air permeable skin material anchored on the surface of the core material. According to the constitution of said first invention, the skin material anchored on the surface of the core material has air permeability, and, for the air that permeates the skin material to reach the air permeable gypsum core material, deodorization is realized by the zeolite grain group in the core material, so that the air is cleaned.

[0005]

The second invention pertains to said first invention characterized by the fact that it has a panel shape. According to the constitution of said second invention, in addition to the function of the constitution of said first invention, the building material is in panel shape, so that the surface area of the building material is increased, and the building material can be set to cover the surface of walls and ceiling. Consequently, the building material of the second invention can realize high efficiency deodorization and cleaning for air.

[0006]

Embodiment of the invention

Figure 1(a) is a diagram illustrating the main portion of an embodiment of the invention of the present patent application. Figure 1(b) is a diagram illustrating a modified example of Figure 1(a). Figures 2(a), (b) illustrate application examples of said embodiment. As shown in Figures 1 and 2, the building material has a panel shape, and it comprises core material (10) and skin material (20) anchored on the surface of said core material (10). However, the building material may also be of a shape different from the panel shape. As shown in Figure 1(a), skin material (20) is applied to cover both surfaces (10a), (10b) (the two outer surfaces perpendicular to the direction of thickness T) of core material (10) and its side surface (10c) (the outer surface perpendicular to said two surfaces). On the other hand, for the building material shown in Figure 1(b), skin material (20) is applied to cover only said two surfaces (10a), (10b) of core material (10).

[0007]

Said core material (10) is mainly made of gypsum (11). In said gypsum (11), group of zeolite grains (12) is mixed. The proportion (by weight) of the group of zeolite grains (12) with respect to the entirety of core material (10) is in the range of 10-35%. The diameter of zeolite grains (12) is 35 mesh or smaller. Here, "35 mesh or smaller" means a diameter of about 0.5 mm. Said zeolite grains (12) may be prepared with calcination or without calcination. The calcination temperature of zeolite grains (12) is about 300-700°C. Calcination can improve the adsorptivity and ion exchange property of zeolite grains (12). Said skin material (20) is an air permeable sheet material, such as thick paper sheet for board, recycled paper sheet, cloth, etc. The thickness of skin material (20) is about 0.35 mm. Said skin material

(20) is pressed and bonded on the surface of core material (10). Overlapped portion (21) of skin material (20) is the portion bonded by an adhesive.

[0008]

The following is the manufacturing method of said building material. First of all, powder-like casting plaster (plaster), zeolite grains (12), and small quantity of additives (bonding reinforcing material, coagulation adjusting material, etc.) are mixed, and water is added to the mixture to form a feed material of core material (10) with appropriate viscosity. Then, said feed material is loaded in a tray with a prescribed size. In this case, the thick paper sheet or the like as skin material (20) has been laid on the bottom surface and, as needed, along the side surface of the tray. Then, said skin material is laid to cover the surface of said feed material loaded in the tray. Then, said feed material loaded in said tray is bonded [with the skin material] under pressure, and the feed material is cured. In this case, said skin material (20) is bonded under pressure on the surface of core material (10).

[0009]

As shown in Figure 2(a), the obtained building material has length L_1 of, say, 1880 mm, 2400 mm, 2700 mm, or the like, and width W_1 of, say, 910 mm, and thickness T_1 of, say, 9.5 mm, 12.5 mm, 15 mm, 24 mm, or the like. In Figure 2(b), the building material has length L_2 of, say, 455 mm, width W_2 of, say, the same as W_1 in Figure 2(a), and thickness T_2 of, say, 9 mm, 12 mm, or the like.

[0010]

With said constitution, because skin material (20) covering core material (10) is air permeable, the air that permeates through said skin material (20) and reaches air permeable gypsum core material (10) is

deodorized by the group of zeolite grains (12) in core material (10), and gets cleaned. Because the interior of gypsum (11) as core material (10) has a lot of pores connecting to the surface of gypsum (11), gypsum (11) is water absorptive and air permeable. Consequently, due to the adsorptivity and ion exchange property of the group of zeolite grains (12) mixed inside gypsum (11), air can be deodorized and cleaned. In addition, as core material (10) has a panel shape, the panel shaped building material has a larger surface area of the building material, and the building material can be laid to cover the walls and ceiling. In this case, the building material can perform air deodorization and cleaning at a high efficiency.

[0011]

Effect of the invention

According to the first invention of the building material of the present patent application, due to the adsorptivity and ion exchange property of the zeolite grain group in the building material, air can be deodorized and cleaned. In addition, according to the second invention of the building material of the present patent application, the panel shaped building material of the first invention can perform air deodorization and cleaning at a high efficiency.

Brief description of the figures

Figure 1 is an oblique view illustrating the main portion of the embodiment of the invention of the present patent application.

Figure 2 is an oblique view illustrating an practical example of said embodiment.

Explanation of symbols

- 10 Core material
- 11 Gypsum
- 12 Zeolite grain
- 20 Skin material

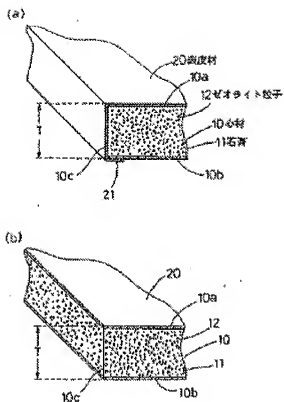


Figure 1

- Key:
- 10 Core material
 - 11 Gypsum
 - 12 Zeolite grain
 - 20 Skin material

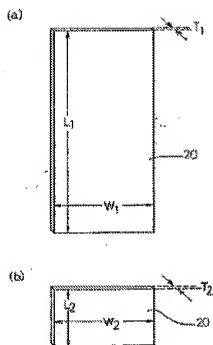


Figure 2